



**SYDNEY WEST**  
*Area Health Service*

# **Tracheostomy Care Guidelines**

**Nepean Hospital**

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## Tracheostomy Care Guidelines

### Description

A tracheostomy is the formation of an opening into the trachea usually between the second and third rings of cartilage.

### Indications for Tracheostomy

- Facilitate weaning from mechanical ventilation by decreasing anatomical dead space.
- Prevention / treatment of retained tracheo-bronchial secretions.
- Chronic upper airway obstruction
- Bypass acute upper airway obstruction

## Types of Tracheostomy

The tracheostomy may be temporary or long term, and may be formed electively or as an emergency procedure.

A **temporary** tracheostomy can be formed when patients require long term respiratory support or are unable to protect their own airways. A tracheostomy tube will be inserted to maintain the patency of the airway. This can be removed when the patient recovers.

A temporary tracheostomy may become long term if the patient's condition requires this.

A **permanent** tracheostomy is created where the trachea is brought out to the surface of the skin and sutured to the neck wall. This stoma is kept open by the rigidity of the tracheal cartilage. The patient will breathe through this stoma for the remainder of his/her life. As a result, there is no connection between the nasal passages and the trachea.

This procedure is **elective** and the patients need to be carefully prepared for the consequences of the procedure.

## Features of Tracheostomy Tubes

Tracheostomy tubes have different features depending on their intended use. There are a large variety of tubes available which provide some or all of these features.

### **Introducers**

All tracheostomy tubes should be inserted using an introducer to prevent damaging the trachea during insertion of the tube. Once the tracheostomy tube has been inserted the introducer should be disposed of.

### **Cuffs**

Some tracheostomy tubes have a cuff which, when inflated, provides an airtight seal which facilitates artificial ventilation.

### **Inner tubes**

Tracheostomy tubes with inner tubes consist of an outer tube, which remains insitu, through which a smaller, inner tube is inserted. The inner tube has an extension at its upper aspect that can be connected to other equipment. It can be removed for cleaning and when weaning the patient. A replacement non-fenestrated inner tube must be kept at the patients bedside at all times.

### **Fenestrations**

Fenestrated tracheostomy tubes have a fenestration (hole) in the middle of the upper aspect of the tube. This will allow the passage of air and secretions into the mouth and nose in the normal way rather than directing them out via the tracheostomy tube. These tubes will always have a non-fenestrated inner tube, which must be inserted if the patient requires further respiratory support or suctioning so the catheter does not pass through the fenestration instead of into the airway.

### **Sub glottic suction**

Blue Line tracheostomy tube from Portex will allow suctioning of the airway above the cuff. This feature will allow the user to remove excessive upper airway secretions that could accumulate above the cuff and flow through the stoma. Intermittent suctioning via this outlet has been shown to decrease the incidence of ventilator-associated pneumonia.

## Types of Tracheostomy Tubes Used In Nepean Hospital

### **Portex, Shiley (Mallinckrodt) cuffed tracheostomy tubes**

A disposable, plastic tube with an introducer and cuff. The Shiley tubes have an inner cannula whilst the Portex tubes can be fitted with an inner cannula.

Uses: Patients who require a **short-term** airway support e.g. post-operatively, or for artificial ventilation.

### **Shiley cuffed/ uncuffed fenestrated tracheostomy tube**

A disposable plastic tube with an introducer, cuff and two inner tubes (one permanent, this has a white top; one fenestrated inner tube, this has a green top). In addition, a spare non-fenestrated inner tube (which has a red top) must also be available. This is used to replace the white top inner tube when this is cleaned.

This tube may be used in the following ways:

1. With the inner tube (white top) insitu and the cuff inflated when the patient requires full ventilatory support.
2. With the inner tube (white top) removed and the cuff deflated. This can be used as the final stage in the process of weaning the patient from using the tracheostomy. By covering the external end of the tube with a one-way valve or decannulation plug, the patient will be able to breathe through their nose and mouth in the normal way. It is more difficult to breath through this system than it is to breath normally as the tube causes some obstruction, and this must be considered when assessing the patient.

## Specialty Tracheostomy Tubes.

Talking tracheostomy tubes are offered by Puritan Bennett (Phonate™), Portex (Trach Talk Blue Line®), and Boston Medical (Montgomery® VENTRACH) to enable speech with an inflated cuffed tube.

Portex Blue Line Extra Length Tubes have two independently inflated cuffs on the lower end of the extended length tube that allow flexibility in sealing the tube in alternate locations, or increasing the seal by inflating both cuffs at the same time.

Bivona Adjustable Hyperflex Tubes from Portex are soft flexible tubes with a thin spiral wire molded in the tube wall that prevents constriction with tube flex. An adjustable flange collar allows the tube length to be adjusted to a desired length.

The Bivona Fome-Cuf® is a type of high volume-low pressure cuff that uses the passive expansion of a foam rubber-filled cuff to maintain a seal with the tracheal wall. The foam cuff provides a continuous seal and can be used as an alternative to air-filled cuffs when persistent air leaks occur with mechanical ventilation.

The decision to use a specific tracheostomy tube is best made with input from numerous people including medical staff, allied health and if appropriate, the individual.

## Components Of A Tracheostomy Tube



Figure 1. TRACHEOSTOMY TUBE IN SITU

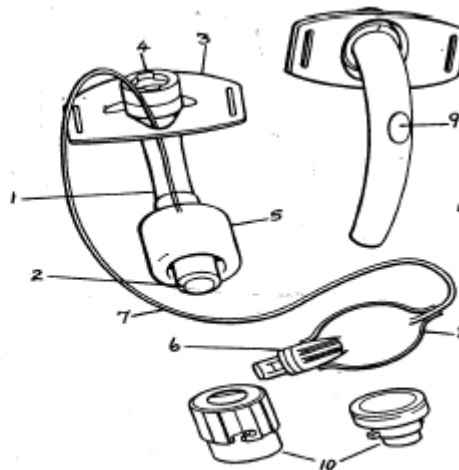


Figure 2. TRACHEOSTOMY TUBE COMPONENTS

### 1. Outer tube

2. **Inner tube:** Fits snugly into outer tube, can be easily removed for cleaning.

3. **Flange:** Flat plastic plate attached to outer tube - lies flush against the patient's neck.

4. **15mm outer diameter termination:** Fits all ventilator and respiratory equipment.

### All remaining features are optional

5. **Cuff:** Inflatable air reservoir (high volume, low pressure) - provides maximum airway sealing for ventilation. To inflate, air is injected via the air inlet valve on the pilot tube.

6. **Air inlet valve:** One-Way valve that prevents spontaneous escape of the injected air.

7. **Air inlet line:** Route for air from air inlet valve to cuff.

8. **Pilot cuff:** Serves as an indicator of the amount of air in the cuff.

9. **Fenestration:** Hole situated on the curve of the outer tube - used to allow / enhance airflow through the vocal cords.

10. **Speaking valve / tracheostomy button or cap (cork):** Used to occlude the tracheostomy tube opening:

(a) Speaking valve - during expiration to facilitate speech and swallowing

(b) button cap or cork - during both inspiration and expiration prior to decannulation.

## Emergency Bedside Equipment

Every patient with a tracheostomy tube should have the following equipment available at the bedside:

- Spare tracheostomy tubes (Same size and one size smaller)
- Tracheal dilator (Only to be used by experienced personnel).
- Self inflating (Laerdal) bag
- Catheter mount (“Licquorice stick”)
- Suctioning equipment: (Ensure equipment is assembled and working properly)
  - Suction tubing
  - Suction catheters
  - Bottle of sterile water to rinse tubing - change daily
- Gloves
  - Non-sterile
- Infectious waste bag
- Dry clean container for holding the speaking valve, occlusive cap/button or spare inner cannula when not in use.
- Humidification equipment
  - Equipment depends on method used -
  - Ensure equipment is assembled and working properly.



## Immediate Post Operative Care

### Desired outcome

Prevent tube dislodgement until stoma is well established

### Purpose

Safely care for a patient with a newly formed tracheostomy

### Authorisation

Registered nurses

Medical officers

Physiotherapists

### Indications and contraindications

#### Indications

Any tracheostomy less than seven days since formation

#### Contraindications

Nil

### Risks and precautions

Risks	Precautions
Tube dislodgement leading to loss of airway	When patient is being moved ONE person must be designated solely to support the tracheostomy tube. Whilst holding the tracheostomy tube, pressure must be applied to the patient's torso by the butt of the hand. This enables you to maintain a firm hold on the tracheostomy particularly if the patient coughs or moves unexpectedly. If tube becomes dislodged never blindly reinsert tube, re-establish airway with an endo-tracheal tube. If in the ward, call a MET. Initial dressing and tapes remain intact for at least 24hours
Haemorrhage	Adequate haemostasis at the time of formation.

## Steps

Procedure	Rationale
<p>Ensure tapes are secure and not too tight.</p> <p>Two lengths of tape must be used when securing the tube. Use double knots without bows or any padding.</p> <p>Tapes that are well secured should allow two fingers to pass freely around the inside of the tapes.</p>	<p>To avoid dislodgement of tube</p> <p>If one tape becomes disconnected, the tracheostomy tube is still secured by the other tape.</p> <p>Reduce the risk of pressure areas around patients neck</p>
<p>Have spare tracheostomy tubes (one the same size and one a size smaller) and tracheal dilators next to patient's bed.</p>	<p>For use in the event of the tracheostomy tube being dislodged after an ET tube has been re-inserted.</p>
<p>Check that airway remains patent. Blockage may be due to an increase of secretions or the tube slipping out of the trachea.</p> <p>When suctioning ensure to support the tube whilst withdrawing suction catheter</p>	<p>Maintain patent airway</p> <p>Reduces the risk of tube dislodgement</p>
<p>Sit patient up to 45<sup>0</sup> after recovering consciousness.</p>	<p>Allows them to use the full capacity of the lungs.</p>
<p>Tracheal suction only as required.</p> <p>Use closed suction unit</p>	<p>Minimize the risk of bleeding.</p> <p>Decreased risk of staff contamination.</p>
<p>Inner tube is removed and cleaned at least three times per day (more frequently as required). Insert temporary inner cannula during cleaning of the permanent inner cannula. Inner cannulas are cleaned under running water and then replaced immediately. They are not to be soaked.</p>	<p>Ensures airway is patent.</p>
<p>Tubes must not be changed before 72 hours following insertion. An experienced medical officer usually performs the initial tracheostomy change. An experienced nurse can change the tube when required thereafter.</p>	<p>Allows stoma to develop and reduces risk of losing the airway.</p>

## Potential Problems

### Tracheostomy Emergencies

**It is important to remember not to blindly poke anything down a fresh tracheostomy and that lifesaving treatment for a blocked or dislodged tracheostomy is to re-establish the airway from above.**

#### **Blocked Tracheostomy**

Air is usually moistened and warmed in the upper airways. It is also cleaned by the action of cilia. Inserting a tracheostomy tube bypasses these natural mechanisms, which means the lungs will receive cool, dry air. Dry air entering the lungs may reduce the motility of the secretions within the lungs and may reduce the function of the cilia. In addition the patient may not be able to cough and/or clear the secretions from their airways through the tracheostomy. This may cause the tracheostomy to become blocked by these thick or dry secretions.

This may be prevented by careful humidification, tracheal suction and inner tube care. However it is necessary to keep emergency equipment at hand at all times as a blocked tube may lead to increasing difficulty breathing and even death.

#### **Displaced Tracheostomy Tube**

The tracheostomy tube can be displaced completely and come out of the stoma or out of the trachea into the soft tissue of the neck.

**In order to keep tracheostomy tubes in position they must be secured with tapes. Tapes that are well secured should allow two fingers to pass freely around the inside of the tapes. Ensure tapes are not too tight as this has the potential to cause pressure areas around patient's neck.**

**If you are unsure whether the tube is in the trachea, listen to the chest bilaterally.**

## **Tracheostomy Complications**

### **Pneumonia**

A build up of secretions may also lead to consolidation and lung collapse, and this may lead to pneumonia. This may also be prevented by careful humidification, good physiotherapy, tracheal suction and inner tube care. Aspiration of gastric contents may also lead to pneumonia. This can occur with patients who are unable to swallow safely.

### **Site Infection**

There is a risk of site infection caused by introduction of organisms from the sputum. Careful observation and dressing of the site will reduce this.

### **Tracheal Damage**

Damage to the trachea may be caused by poor tracheal suctioning techniques. An inner tube should always be inserted to a non-fenestrated tube prior to performing tracheal suction to ensure the suction catheter does not pass through the fenestration causing tracheal damage.

There is also a potential for a cuffed tube to damage the trachea. This is due to pressure from the cuff causing necrosis of the tracheal tissue. All tracheostomy tubes now have low-pressure cuffs, however over-inflation should still be avoided. The pressure in the cuff should be just adequate to prevent air leakage.

### **Communication**

Patients with a tracheostomy will be unable to speak, unless the tube has a speaking aid. Good communication including the use of speaking valves, pen / paper or picture cards are vital to prevent the patient feeling frightened and isolated.

## General Guidelines for the Care of Patients with a Tracheostomy

### Desired Outcome

To safely care for a patient with a tracheostomy tube insitu.

### Purpose

Provide guidelines for the general care of a patient with a tracheostomy.

### Authorisation

Registered nurse

Medical Officer

Physiotherapy

Student Nurse under supervision

### Indications for tracheostomy

- To facilitate weaning from mechanical ventilation by decreasing anatomical dead space.
- To remove retained tracheo-bronchial secretions.
- To bypass upper airway obstruction

### Risks and Precautions

Risks	Precautions
Requires an operation	Routine peri-operative care
Tube dislodgement	See below
Tube occlusion	See below
Superficial wound infection	See below
Problems with tracheal stenosis	See below

### Steps

Procedure	Rationale
The emergency equipment should be at the patient's bedside at all times. Each shift the nurse responsible for the patient should check the equipment is present and in working order.	The emergency equipment is the minimum required to care for a patient with a tracheostomy including emergency situations.
In order to keep tracheostomy tubes in position they must be secured with tapes. Ensure tapes are not too tight  Two lengths of tape must be used when securing the tube. Use double	Tapes that are well secured should allow two fingers to pass freely around the inside of the tapes. This has the potential to cause pressure areas around patients neck

knots without bows	If one tape becomes disconnected, the tracheostomy tube is still secured by the other tape
For cuffed tracheostomy tubes measure cuff pressure once each shift	To ensure the cuff is not over inflated which may cause damage to the trachea
The tracheostomy site should be assessed at least each shift and redressed as appropriate. Never use cottonwool. Always use gauze for tracheostomy dressings	To check for signs of infection. If the site is inflamed take a swab and send to microbiology for culture. Cotton wool fibres can cause irritation to the airways and cotton wool balls are small and can be lost in the stoma
Ensure the tube remains patent by regular tracheal suction and cleaning the inner tube. The patient should be suctioned prn and at least 2 <sup>nd</sup> hourly if ventilated, and at least 4 <sup>th</sup> hourly if not ventilated.	Maintain patent airway
Humidification must be maintained at all times. Ensure a Heat and Moisture Exchange (HME) filter is in place at all times. If patient's secretions are tenacious with humidification give saline nebulisers 2-4 hourly as prescribed <b>Wet circuit should be used if CPAP or Positive Pressure Ventilation is applied via a tracheostomy. HME or water bath humidifier must be used on non-ventilated tracheostomy patients.</b>	To improve moistening of secretions, replace lost natural function of upper airway and reduce the risk of the tube becoming blocked with dried secretions
Air entry should be assessed on a regular basis	To ensure the tube is patent and in the correct position
Assess the need for mouth care and deliver as necessary	Patients with tracheostomy have altered upper airway function and may have increased mouth care requirements.

<p>Patients may eat and drink if they have been assessed as able to do so safely by the consultant or the speech therapist. The grade of food must be specified.</p>	<p>Ensures they are able to swallow safely which will prevent aspiration</p>
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## Guidelines for Tracheal Suctioning

### Desired outcome

To safely care for a patient with a tracheostomy insitu

### Purpose

To safely and sufficiently clear secretions from tracheostomy tube allowing adequate respiratory function.

### Authorisation

Registered Nurse  
Medical Officer  
Physiotherapist  
Student Nurse Under Supervision

### Indications and contraindications

Tracheal suction must be carried out regularly on patients with a tracheostomy. The frequency with which suction is required will vary widely between patients. Each must be individually assessed. Factors which should be considered in assessing a patient's need for suction are:

- amount and consistency of secretions. Are they dry or loose? If these are dry check humidification. Is it adequate? Do saline nebulisers need to be increased?
- patients ability to cough and clear own secretions. Encourage deep breathing and coughing. If possible, sit the patient out of bed. If this is not possible sit the patient upright at more than 30°
- respiratory rate. If this is increased assess the patient's need for suction. If the patient does not require suction, treat cause of high respiratory rate.  
**Respiratory rate >36 or < 8 fulfils MET criteria**
- oxygen saturation. Has this deteriorated? Maintain adequate SpO2 as specified by the caring team. **Oxygen saturation < 85% fulfils MET criteria.**
- presence of infection. Have the secretions altered i.e. changed colour, consistency and odour? Is the patient having difficulty breathing, clearing secretions

It is vital to clear secretions from the chest for several reasons:

- maintain a patent airway
- prevent lung collapse due to small airways blocked by secretions

Patients with a tracheostomy also have an increased risk of pneumonia as the natural defence mechanisms of the upper airway are bypassed.



## Risks and precautions

Risks	Precaution
Infection	Use clean technique
Cross Infection	Use closed suction system when available. Do not use the same suction catheter to suction trachea and oropharynx.
Tracheal Trauma	Ensure non-fenestrated inner cannula is insitu when suctioning <b>DO NOT APPLY SUCTION WHILE INSERTING CATHETER.</b>
Occupational Health and Safety	Utilise personal protective equipment i.e.: goggles and mask or face shield, gloves and plastic apron. Position bed for comfort.
Suction induced hypoxia	It may be necessary to give the patient some extra oxygen for a short while before and after suctioning.

## Resources

- Suction regulator, (high vacuum only)
- Closed suction catheter or suction catheters of the appropriate size
- Sterile receptacle with sterile water for flushing
- Pair clean disposable gloves
- Protective eye wear, masks and plastic apron
- Sputum specimen trap if required
- Inner tube if patient has a fenestrated tube insitu (Shiley)
- Yankauer sucker

## Suction catheter selection

Tracheal damage may be caused during tracheal suction. This can be minimised by using the appropriate sized suction catheter, generally a size 12 French.

If the catheter is too large the suction it creates will cause damage. A large catheter will also occlude the tracheal tube, which may cause hypoxia however, if the catheter is too small it will not be adequate to remove secretions so that is why a size 12 catheter is recommended for tracheostomy tube sizes 6.0 –9.0 and size 10 catheter for a size 4 tracheostomy.

## Steps

Intervention	Rationale
Check the emergency equipment. <b>Ensure that a non-fenestrated inner cannula is insitu</b>	To reduce tracheal damage.
Explain the procedure to the patient	To obtain patients co-operation. This procedure is unpleasant & can be frightening.
If the patient is oxygen dependent or cardiovascularly unstable, it may be necessary to give the patient some extra oxygen for a short while before and after suctioning. It is important to monitor saturations before, during and after procedure.	Introducing a suction catheter into the airway may cause hypoxia
Observe the patient throughout the procedure to ensure their general condition is not affected.	Tracheal suction may cause vagal stimulation leading to bradycardia, hypoxia and may stimulate bronchospasm.
Don protective equipment. Wash & dry hands	To reduce the risk of cross infection and protect nurse through universal precautions. Most patients cough directly onto the nurse's clothes after suction; standing to one side should minimise the risk.
Switch suction unit on and check that the suction is effective	To ensure the suction is working correctly.
Connect suction tubing to closed suction catheter. If open suction method is used, open the end of the suction catheter pack & connect to the most appropriate sized suction catheter.	See above section on catheter selection
Gently introduce the catheter until it stops. Withdraw approximately 2 cm. <i>Do not push against resistance at any time. Do not apply suction whilst introducing the catheter</i>	The catheter should go no further than the carina to minimise risk of trauma to tracheal wall Suctioning while introducing the catheter causes mucosal irritation, damage & hypoxia

<p>Apply suction &amp; smoothly withdraw the catheter from the tube. <b>Do not suction for longer than 15 seconds at a time</b></p> <p>Patients may require more than one pass of the suction catheter</p>	<p>It is not necessary to rotate the catheter whilst applying suction as catheters have circumferential holes. Prolonged suctioning will result in hypoxia and trauma</p>
<p>Note the colour, tenacity and quantity of the secretions. If secretions look infected consider sending a sample if this has not recently occurred.</p>	<p>Monitor changes and anticipate potential infection at an early stage.</p>
<p>Remove the glove from the dominant hand by inverting it over the used catheter &amp; dispose into garbage bag</p>	<p>To minimise the risk of infection</p>
<p>Clean suction tubing by inserting into sterile water. Change suction tubing daily and canister bag when three quarters full.</p>	<p>Allows use of suction tubing for the same patient on subsequent occasions.</p>
<p>Assess the patient's respiratory rate, skin colour and/or oxygen saturation.</p>	<p>Ensure pt is not compromised following suction.</p> <p>Assess whether further suctioning is required.</p>

## Cleaning of Dual Cannula Tracheostomy Tube

### Desired Outcome

Prevention of blockage of the tracheostomy tube with dry secretions  
Maximise gas exchange.  
Minimise work of breathing.

### Purpose

To ensure the patient has a patent inner cannula

### Authorisation

Registered Nurse.  
Medical Officer  
Physiotherapist  
Student nurses under supervision

### Indications

- Minimum requirement of once per shift
- More frequent cleaning may be required depending upon the amount and nature of patients secretions.
- If patient becomes sweaty, tachycardic, desaturates, hyperventilates or any other signs of distress
- Difficulty passing a suction catheter

### Risks and Precautions

Risks	Precautions
Introduction of infection	Use clean technique
Tube dislodgement	Place the second inner cannula (red top) in the tracheostomy tube during cleaning. Support outer cannula during procedure.
Hypoxia	Give O <sub>2</sub> prior to procedure

### Resources

Kidney dish.  
Running tap water  
Sterile swab sticks  
Non-sterile gloves.  
Suction equipment.  
Mask and goggles.  
Pulse oximeter

## Steps

Procedure	Rationale
Wash Hands.	To minimise cross infection
Gather and organise equipment	
Explain procedure to patient	To minimise patient anxiety
Assess patient condition	To ensure tolerance for the procedure
Set up pulse oximeter and attach finger/ear probe to patient	Monitor patient's level of oxygenation throughout procedure.
Ensure patient well oxygenated (SpO <sub>2</sub> >95%)	To minimise risk of a hypoxic period
Don gloves, mask and goggles	To protect self from droplet contamination
Holding flange in one hand – inner cannula in other, twist inner cannula roll gently until unlocked. Remove inner cannula and place in kidney dish	To minimise movement of outer cannula to reduce irritation and coughing.
Insert spare inner cannula into tracheostomy.	To prevent build up of secretions in outer cannula.
Reapply oxygen as required	
Wash inner cannula under running water	
Reinsert inner cannula in tracheostomy – make sure it's locked in	The blue dots on inner and outer cannula should be aligned.
Clean spare inner cannula with cool tap water – as above – and store in jar. <b>(Do not soak).</b>	Ready for next use.
Ensure patient is left comfortable.	Document procedure in progress notes or on tracheostomy care form

## Guidelines for Changing a Tracheostomy Tube

### Desired outcome

To safely change a patient's tracheostomy tube.

### Purpose

To ensure patent airway at all times.

### Authorisation

Registered nurse medical officer

Physiotherapy

Student nurse under supervision

### Indications and Contraindications

Tracheostomy tubes may be changed for the following reasons:

- if a different type of tube is needed e.g. for weaning or prior to a procedure
- to insert a long term tube
- if the tube has become blocked/ or cuff failure

Tracheostomy tubes are usually changed by a doctor, however nurses whom feel confident and competent may undertake in the procedure. The first time a tube is changed it must be performed by or under the supervision of an appropriately skilled member of the medical team.

### Risks and precautions

Risk	Precaution
Loss of airway	Tracheostomy change is a two-person procedure. Ensure good communication between operators. Ensure patient is well oxygenated prior to procedure
Infection	Use clean technique
Trauma	Insert tracheostomy with minimal force
Occupational Health and Safety	Use personal protective equipment

## Resources

- New tracheostomy tube of same size as one in situ & one size smaller
- Protective eye wear, disposable face mask & yellow bag
- Suction unit
- Closed suction system or y- suction catheter of appropriate size
- Tracheostomy dressing and tapes
- Sachet of sterile lubricating jelly
- Tracheal dilators & scissors
- Disposable latex gloves & apron
- Sachet of sterile saline & 10 ml syringe
- Y suction catheter to use as an introducer

**There is more than one method of changing a tracheostomy tube. This depends on the length of time the trachy has been insitu and the operator's preference. Two commonly used methods are:**

- Using a Y-suction catheter as an introducer (cut off at Y end)
- Using the introducer supplied in the pack.

**The method described in these guidelines uses the Y suction catheter.**

## Steps

Procedure	Rationale
Check the emergency equipment	To maintain an airway if problems occur
<b>Two people are required to carry out this procedure</b>	This is a potentially hazardous procedure and the person carrying out the procedure will need an assistant
Stop NG feeding at least 2 hours prior to procedure.	To prevent aspiration of stomach contents
Explain the procedure to the patient	To obtain patient consent & co-operation
Screen bed & position patient sitting upright with neck supported with pillows, ensuring neck is extended.	To ensure privacy & the least discomfort to the patient. To assist in the changing of the tube by slightly extending the neck.
Wash hands & put on protective eye wear & face mask	To reduce the risk of cross infection.
Gloves & apron to be worn by both nurses throughout this procedure	To comply with Standard Precautions

Prepare equipment - If a cuffed tube, test the cuff for leakage & ensure that air is out of cuff. Lubricate the tube.	To ensure that all parts fit together correctly before insertion into the trachea.
If the patient is oxygen dependent or cardiovascularly unstable, it may be necessary to pre oxygenate prior to procedure	Delivery of oxygen will be compromised during the procedure
Turn on the suction unit. Clear oral secretions if necessary. Perform tracheal suction.	To have airway maintenance equipment functioning and ready & to ensure airway is clear prior to procedure.
Remove humidification/oxygen mask, dressing and tapes, & discard in yellow bag.	To facilitate removal of the tube and to secure the path of the airway.
If indicated, clean around the stoma with normal saline & dry gently. If present, deflate tracheostomy cuff. Insert cut off Y suction catheter into trachea and remove old tracheostomy holding on to the suction catheter at the level of the stoma.	To remove superficial crusts. Skin should not be left moist as this leaves an ideal medium for the growth of micro-organisms. Insert Y suction catheter to maintain the correct airway tract.
Remove the soiled tube from the patient's neck in a curved downward movement, while asking the patient to <b>breathe out</b> .	Conscious expiration relaxes the patient & reduces the risk of coughing.
Insert a clean tube over the y suction catheter using an 'up and over' action. Remove the y suction catheter introducer immediately	Introduction of the tube is less traumatic if directed along the contour of the trachea.
If cuff is present, use a syringe to inflate the cuff of the tube with air until a seal is achieved.	To protect airway but prevent trauma to the trachea. If the cuff is adequately inflated the patient should <b>not</b> be able to speak.
Insert inner tube.	To maintain the airway
Replace humidifier/oxygen.	To maintain oxygenation and moisten airway.
Apply the clean dressing	
Tie the tube in place. Cut excess tape.	Ensure tapes are not too loose as the tube may become dislodged. However also ensure tapes are not too tight as pressure areas can occur. The tapes should accommodate two fingers.



Ensure air is passing through the tracheostomy. Observe the patients respiratory pattern. The patient should look comfortable.	To ensure tube is in correct position
Discard old tube appropriately	These tubes are disposable
Document the procedure in the patients notes	For future reference

## Guidelines For Capping and Removing a Tracheostomy

### Desired outcome

Safe removal of tracheostomy

### Purpose

To safely remove a tracheostomy tube from a patient that no longer requires it.

### Authorisation

Registered nurse

Medical officer

### Note:

There are various techniques used to wean patients from breathing through a tracheostomy tube back to using their upper airways for respiration. Patients react individually and medical staff favour different techniques. It is important that each individual case is carefully discussed and a clear plan is made with the appropriate medical teams prior to the weaning process commencing. This must be evaluated and documented continuously.

### Indications and conditions for weaning

- The patient should have no ongoing requirement for mechanical ventilation, or if some requirement still exists, it should be possible to meet these ventilatory needs with non-invasive approaches.
- Strong cough - is able to clear secretions to the top of the tracheostomy tube or into mouth (with cuff down)
- No physiologically significant upper airway lesion should be present.
- Breathing spontaneously with a regular respiratory pattern and rate of less than 20 breaths per minute
- Low oxygen requirement and adequate saturation
- Cuff on tracheostomy is deflated and saturations maintained.
- Ideally patient is orientated and able to understand

### Preparation for weaning

The decision to remove a patient's tracheostomy tube should be taken jointly by medical, nursing and physiotherapy staff. The patient must be involved in the discussion if possible and careful explanation of what will happen, how their breathing may feel, and to notify staff if experiencing difficulties. The patient must have a period of 24hrs with a decannulation cap insitu and any

cuff deflated to allow the patient to start using their upper airways. It may be necessary to change to a smaller tube prior to weaning if the patient has difficulty breathing around their tracheostomy tube.

## Resources

- Oxygen saturation monitor
- Suction unit
- Decannulation cap
- Facial oxygen supply - mask or nasal cannulae
- Emergency equipment

Procedure	Rationale
Check emergency equipment	Maintain patients airway if problem occurs
Stop NG feeding at least 2 hours before removal - review when to recommence with medical team	Prevent aspiration of stomach contents
Explain procedure to patient	To gain consent and co-operation
Ensure patient is positioned in an upright, comfortable position.	To optimise respiration
Carry out tracheal suction	Procedure may cause patient to cough. If secretions are present this may lead to patient distress and cause the procedure to fail. Allow for patient recovery.
Remove the inner tube - clean and store.	To allow the patient to breath through the fenestration.
Cuff deflated and saturations maintained (not all tracheostomy tubes will have a cuff).	To allow the patient to breath around the tube
Apply decannulation cap	The patient now must breathe through their upper airway.
Apply facial oxygen supply and encourage patient to take deep breaths and cough. Nebulisers can help the patient to cough and clear secretions easier.	Provide supplementary oxygen and to help them begin to feel the change in breathing and ensure they are strong enough to clear secretions
Ensure patient is able to obtain adequate breath via upper airway	Tracheostomy tube may be too large to allow the patient to breathe around it. If so, remove the decannulation cap, allow

	the patient to breathe through the tracheostomy again, and discuss the need for a smaller tube with medical staff.
Initially monitor the patient continuously looking for a drop in SpO2, increased RR or altered respiratory pattern. Stay with the patient until they are settled and feel comfortable.	Ensure patient is safe and reassured before leaving them
Continue to monitor respiratory rate and pattern, heart rate and oxygen saturation 1/4 hourly for two hours and then observe patient at least 1/2 hourly, document. Set alarms on the saturation monitor.	Monitor will alarm if patient desaturates
Provide the patient with a nurse call bell and encourage to call for help at any time especially <b>if they feel breathless, are unable to cough and clear secretions, or begin to feel tired</b>	Reassure patient of safety and get early signs of changes and document
If patient has difficulty tolerating the decannulation cap, remove cap, replace inner tube ( <b>fenestrated-green cap</b> ), to return patient to tracheostomy breathing.	This will allow the patient to return to tube breathing.
Clean and dry decannulation plug and store in clean pot with lid.	Prevent introduction of infection.
Follow agreed weaning regime	Ensure patient makes progress and does not become over tired.
Once capping has been tolerated for at least <b>24 consecutive hours</b> the decision to remove tracheostomy tube can be made.	Whilst many patients can tolerate continuous wearing of the cap, some find it takes getting used to. Therefore wear time should be increased as tolerated. <b>PATIENTS MUST BE TOUGHT TO REMOVE THE CAP THEMSELVES IF THEY EXPERIENCE BREATHING DIFFICULTIES.</b>
Tracheostomy Removal The tracheostomy tube is removed, stoma and edges are observed, and an occlusive gauze dressing applied. Dressing should be changed every day or when dirty. Advise the patient to apply pressure to the dressing covering stoma site to	Provide an air tight seal and a clean environment for healing

increase voice and to re-inforce cough	
Document all observations and nursing actions	Provide ongoing evaluation

This weaning process may happen more quickly if the patient responds well. It is sometimes better to remove the tube early, as it will cause obstruction to the natural airway and may prevent the patient tolerating the normal respiratory pathway. Every patient is different and weaning should be guided by the patient's progress, i.e.; respiratory rate, oxygen saturations, and work of breathing (effort). Assessment of the weaning patient should be continuous and documented on the observation chart

## Care Of Passy Muir Speaking Valve

HOW IT WORKS	CLEANING INSTRUCTIONS.
<p>The speaking valve contains a movable plastic disc that opens on inspiration but closes on expiration. This means that during expiration no air can escape through the tracheostomy tube opening. It is redirected up through the larynx instead.</p>	<p>Clean daily - as per inner cannula or wash in soapy water. Rinse thoroughly in cool-tepid water (not hot). Air dry.</p>

WHILE WEARING THE VALVE, THE PATIENT WILL NOTICE.....	
<ul style="list-style-type: none"> <li>• Air exhaling via the nose and mouth.</li> <li>• Speech is improved, full sentences are possible.</li> <li>• Oral + nasal secretions lessen because of evaporation of secretions as air is exhaled.</li> <li>• Energy levels may increase.</li> <li>• Strong coughing may blow off valve</li> </ul>	<ul style="list-style-type: none"> <li>• Expectoration returns to the normal route, i.e. the oral cavity.</li> <li>• Patients are able to blow their nose or sneeze</li> <li>• Occasional dryness of mucosa may occur.</li> <li>• Lung back pressure - normal feeling of restored volume - may take getting used to.</li> </ul>

### NURSING CONSIDERATIONS WITH THE PASSY MUIR VALVE.

- To use the valve the tracheostomy **cuff must be deflated. If left inflated the patient will have a total airway obstruction on exhalation.**
- To use the valve patients should also be medically stable, and have enough strength to exhale around the tracheostomy tube, and out through the nose and mouth.
- Stay with the patient during first wearing. (i.e.5-10mins or until patient is confident wearing valve).
- Increase wear-time as tolerated.
- Ensure patient has a sputum container or tissues and bag for orally expectorated secretions.
- Increased mouth care is necessary if the patient experiences dry mouth.
- Assess the patient's work of breathing. Observe for adequate exhalation - so that stacking of breaths is avoided.
- Observe secretions. Thick unmanageable secretions require a medical review by the patient's team so that they are carefully evaluated and treated.
- If the patient complains of difficulty exhaling, downsizing of the tracheostomy tube usually allows enough airflow to enable valve use.
- **DO NOT THROW AWAY** -speaking valves are not disposable, (they are single patient use).

## DEALING WITH EMERGENCIES

### IF THE TRACHEOSTOMY TUBE FALLS OUT!!...

#### • DON'T PANIC!

- Once the tracheostomy tube has been in place for about 5 days the track is well formed and will not suddenly close.
- Reassure the patient
- Apply oxygen via facial mask.
- Call for medical help.
- Ask the patient to breathe normally via their stoma while waiting for the doctor.
- Stay with patient.
- Prepare for insertion of the new tracheostomy tube
- Once replaced, tie the tube securely, leaving two finger-spaces between ties and the patient's neck.
- Check tube position by (a) asking the patient to inhale deeply - they should be able to do so easily and comfortably, and (b) hold a piece of tissue in front of the opening - it should be "blown" during patient's exhalation.

#### **Acute dyspnoea**

Acute dyspnoea is most commonly caused by partial or complete blockage of the tracheostomy tube by retained secretions. To unblock the tracheostomy tube:

- **ASK THE PATIENT TO COUGH:** A strong cough may be all that is needed to expel secretions.
- **REMOVE THE INNER CANNULA:** If there are secretions stuck in the tube, they will automatically be removed when you take out the inner cannula. The outer tube - which does not have secretions in it - will allow the patient to breath freely. Clean and replace the inner cannula
- **SUCTION:** If coughing or removing the inner cannula do not work, it may be that the secretions are lower down the patients airway. Use the suction to remove the secretions.

If these measures fail - commence oxygen therapy via a non re-breather facial mask, and call for medical assistance.

It is possible that the tracheostomy may have become displaced. Stay with the patient until assistance arrives. Be prepared to change tracheostomy tube.

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